



# KING COUNTY AUDITOR'S OFFICE

May 8, 2018

## Second Follow Up on Puget Sound Emergency Radio Network Project

TO:

Metropolitan  
King County  
Councilmembers

FROM:

Kymber Waltmunson,  
County Auditor




**PSERN has completed or made progress toward completing several recommendations from prior audit reports; however, it has not implemented the most important recommendations related to meeting schedule requirements to replace the existing emergency radio system.**

Delays to scheduled lease completion and tower site construction continue to influence the PSERN project negatively. Seven months into the re-baselined five-year schedule, the project is already behind its milestone completion dates. For example, as of April 30, 2018, leases are not complete for more than half (34 of 62) of tower locations and construction has not started on more than 70 percent of the tower development sites.

In addition, PSERN's multi-agency Joint Board is considering adding more tower sites to the project scope in order to meet in-building radio coverage needs. The combination of delays to existing requirements, plus the potential to add towers may have serious fiscal and schedule implications for the recently re-baselined project budget and schedule. Implementing all of our remaining recommendations could lower project risks and provide clearer communication to project stakeholders.

Of the nine audit recommendations:



	4 <b>DONE</b>		4 <b>PROGRESS</b>		1 <b>OPEN</b>
<b>Fully implemented</b>		<b>Partially implemented</b>		<b>Remain unresolved</b>	
Auditor will no longer monitor.		Auditor will continue to monitor.		Auditor will continue to monitor.	

Please see below for details on the implementation status of these recommendations.

### Recommendation 1:

PROGRESS 

**The Puget Sound Emergency Radio Network project team should revise the project schedule and communicate it to stakeholders before the end of 2015 to include reasonable time to accomplish the remaining tasks necessary to finish tower site construction. The schedule should be based on progress to date and identify the impact on the remainder of the project schedule.**

STATUS UPDATE: While the PSERN project team did not meet the “end of 2015 timeframe” noted in the recommendation, it did re-baseline the project schedule as of September 18, 2017. The project team presented this schedule to the multi-agency Joint Board, providing governance over the PSERN project, in October 2017. The new schedule extended the timeline for tower site construction by two years and overall project completion by 12 months to December 2022. The Joint Board approved this new schedule in January 2018.

Extending the schedule for tower site development should have provided reasonable time to accomplish remaining lease, development, and construction tasks. However, 7 months into this new baseline schedule, PSERN is not producing completed sites at the pace necessary.

To complete this recommendation, PSERN needs to meet its published schedule milestones.

### Recommendation 2:

PROGRESS 

**The Puget Sound Emergency Radio Network project team should improve reporting to clearly demonstrate to stakeholders the progress on leasing and constructing radio tower sites. Reporting should show how current cost and schedule forecasts compare to the assumptions used in the preliminary project estimate.**

STATUS UPDATE: Since mid-2017, PSERN has provided monthly charts to the Joint Board to display the status of leases and towers completed, those in progress, and those pending either a tentative lease agreement or a tower site construction start. However, because of the way PSERN presents the data it is not possible to directly compare the construction costs of tower site development in the original budget assumptions to the updated estimates in reports provided to stakeholders.

To complete this recommendation, PSERN needs to display a side-by-side cost comparison by tower location that shows the price initially assumed to the most current estimate for each tower site. This comparison will allow PSERN and its stakeholders to see real-time cost data and identify lessons learned to improve future work and prevent mistakes from repeating, potentially causing more cost overruns.

### Recommendation 3:

PROGRESS 

**The Puget Sound Emergency Radio Network project team should establish and document a project baseline prior to signing any construction contract. The baseline should use the certainties from the Motorola contract, best available information for tower site costs and schedule, and refined estimates of other costs.**

**STATUS UPDATE:** PSERN made several significant adjustments in the 2017 re-baselined project schedule and budget. The capital budget for the project increased by \$32.7 million, with \$10.76 million of this increase directly related to existing and new tower site development costs, engineering design fees, and construction management. \$5.9 million of this capital increase related to Motorola contract changes. This re-baselined budget included cost factors from the Motorola contract for the 11 tower site locations for which Motorola is responsible, but it remains challenging to determine cost certainties for the remaining tower sites that King County is responsible. This task is challenging because PSERN has not completed the leases and permits for remaining County tower locations. These documents would describe specific design and construction needs for sites now incomplete.

In order for PSERN to complete this recommendation, PSERN must finish the leasing, permitting, and design phases for all 28 locations that have not yet reached lease tentative agreement with responsible government agencies and/or land owners. This will ensure the baseline encompasses the best available information for tower site costs, while also ensuring PSERN has vetted the assumed project schedule with all third party stakeholders.

#### Recommendation 4: Work Order Risks

DONE 

**The Finance and Business Operations Division should provide ongoing technical assistance to the Puget Sound Emergency Radio Network project team to help manage the cost risks of any construction work order contracts for this project.**

**STATUS UPDATE:** The Finance and Business Operations Division (FBOD) has met with the PSERN staff on several occasions to provide technical assistance. FBOD contracting support led to PSERN bundling between five and six tower sites into a design-bid-build work order package. Further, PSERN elected to use a State pre-existing contract in order to procure towers while providing tower structures to PSERN construction contractors to erect. The pre-existing State contracts used by PSERN contain competitively bid pricing. This phased and bundled work order system has many advantages over work order contracting originally considered for PSERN. It avoids vague time and materials contracts without a complete design, which could be costly.

The impact of implementing this recommendation has been to maximize firm fixed, competitive pricing on work order procurements.

#### Recommendation 5: Contract Options

DONE 

**Before seeking bids on a work order construction contract for the radio tower sites, the Puget Sound Emergency Radio Network project team and Finance and Business Operations Division should evaluate the relative benefits, costs, and risks specific to each site of inclusion in a work order contract or a traditional design-bid-build contract. This evaluation should be documented and result in a recommended approach for each individual site for consideration and approval by the project sponsor.**

**STATUS UPDATE:** The Finance, Business and Operations Division (FBOD) has met with PSERN staff on several occasions to provide technical and procurement assistance regarding using a work order contract versus a traditional design-bid-build contract. This collaboration resulted in the decision to use traditional design-bid-build approach via the work order-contracting vehicle. This contracting process involves bundling at least five tower sites into a minimum 80 percent completed design after permitting approval is reached for a set of specific tower sites. FBOD considers this a best practice for the PSERN phased leasing schedule for 57 tower sites. This contracting approach has advantages over designing a procurement package for 100 percent of the towers as one construction contract. Based on the phased nature of PSERN's tower development schedule, a larger design-bid package would unnecessarily delay most tower construction by more than one year causing not only delays to Motorola equipment delivery, but increasing cost via annual price escalators.

The impact of implementing this recommendation has been to maximize competitive pricing by designing appropriately scaled work packages to meet the phased nature of PSERN's project schedule.

## Recommendation 6:

PROGRESS



**The Puget Sound Emergency Radio Network project team should expand its outreach and communications plan to identify detailed, proactive engagement with building owners to allow them time to evaluate their systems and prepare for any needed changes. The complete updates should be presented at the first quarter 2017 PSERN project briefing to the Law and Justice Committee.**

**STATUS UPDATE:** The PSERN Joint Board assigned an In-Building Coverage (IBC) Task Force in early 2017 to more deeply analyze technical solutions for improving radio coverage within buildings under the PSERN umbrella. PSERN's outreach efforts to affected jurisdictions involved working with approximately 30 area fire chiefs to communicate the challenge and potential solutions to solving the in-building coverage issue for emergency responders. Additionally, PSERN added to its website a list of requirements and other information as to how in-building communication systems can connect with the PSERN finished radio system.

More importantly, the IBC Task Force is in the midst of evaluating possible technical solutions which have expanded beyond building codes and building modifications to include constructing more tower sites or using mobile radio systems. The IBC hired a consultant in December 2017 to produce a gap analysis to determine where in-building coverage will be the worst throughout King County. The Joint Board received this consultant report for its meeting on April 26, 2018.

To complete this recommendation, PSERN must thoroughly evaluate budget and schedule risks on each IBC option the Joint Board will consider implementing. Specifically, PSERN must determine to what extent new radio towers will be the solution to in-building coverage gaps throughout King County versus relying on stand-alone building communication systems. The IBC Task Force recommendations and subsequent Joint Board decisions to add towers to the PSERN scope may pose serious schedule and budget challenges for the project in addition to those direct costs articulated in the preliminary consultant report.

## Recommendation 7:

DONE 

**The Puget Sound Emergency Radio Network project team should evaluate and compare the impacts on contract requirements, schedule, and costs for 1) the current plan of simultaneously constructing Primary Bounded sites, versus 2) extending the Primary Bounded Area site development schedule to allow construction of sites in sequence. Results of the evaluation should be presented at the first quarter 2017 PSERN briefing to the Law and Justice Committee.**

STATUS UPDATE: The re-baselined PSERN project schedule contains two major components to address this recommendation. PSERN has scheduled the Primary Bounded Area (PBA) sites of the County as an earlier phase of work to be finished by December 31, 2018. Separately, tower sites mounted with Motorola equipment outside of the PBA will be complete by July 17, 2019. Tower locations outside of the PBA include those most challenging in terms of leases, design work, construction, and possible environmental mitigation at U.S. Forest Service locations. Some of the non-PBA tower locations exist at higher, isolated elevations needing helicopter-assisted construction services.

Implementing this recommendation has allowed PSERN to create a phased tower development schedule focusing on the most important towers in 2018, the PBA, which are needed to get a microwave system with sufficient interim operable capability to deploy new Motorola dispatch systems for emergency responders. Secondly, this dual geographic approach to tower construction allows an extra year in the schedule for the most complicated leases and permitting on federal and state lands.

## Recommendation 8:

DONE 

**The Puget Sound Emergency Radio Network project team should complete updated site development cost estimates based on current information, should update the overall project costs based on this information, and enter the project baseline costs into the county's Project Information Center (PIC) prior to the first quarter 2017 PSERN project briefing to the Law and Justice Committee.**

STATUS UPDATE: In March 2017, PSERN uploaded the new baseline budget into the County PIC system monitored by the Office of Performance Strategy and Budget (PSB). The project team increased the capital budget by \$32.7 million, based on using the best available information from early tower site completion and leases.

Implementing this recommendation increased the transparency and accuracy of site development cost estimates.

## Recommendation 9:

OPEN 

**The Puget Sound Emergency Radio Network project team should refine the schedule to reflect realistic site development milestone achievement dates and should enter the project baseline schedule into the county's Project Information Center prior to the first quarter 2017 PSERN project briefing to the Law and Justice Committee.**

STATUS UPDATE: In March 2018, PSERN uploaded the new baseline schedule into the County PIC system monitored by Performance Strategy and Budget. The overarching concern remains whether the re-baselined schedule is realistically achievable.

The re-baselined PSERN schedule extends the original tower completion timeline by 23 months through August 2019. The average pace of tower development completion during this 23-month extension is 2.25 tower sites completed per month to reach 57 completed tower locations in August 2019.

However, PSERN has only completed 7 new tower sites since mid-September 2017. This development pace reflects approximately 50 percent of the production rate needed for tower completion in 2018 and 2019 (See Exhibit A).

To complete this recommendation, PSERN needs to meet the rate of tower site development published in its re-baselined schedule. If PSERN does not meet its required rate of tower site development, the project risks impacts to its Motorola contract milestones, increased expenses for delays, and delayed replacement of the obsolete radio system for King County emergency responders that will no longer supportable by parts and service vendors.

EXHIBIT A: PSERN tower site completion rate



Michael Bowers, Capital Projects Oversight Analyst, conducted this review. Please contact him first at 206-263-6900 if you have any questions about the issues discussed in this letter.

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